1.0 Introduction

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) requires that States and Metropolitan Planning Organizations (MPO's) consider urban freight in their long-range plans, transportation improvement programs, and annual work elements. There are, however, some issues that must be addressed before the States, MPO's and other planning agencies can be effective in freight planning:

- Most of these agencies have little experience with freight planning. Senior planners and managers have spent most of their professional careers dealing with the transportation of people, not freight;
- Current and historical data on freight, especially truck movements, are extremely limited; and
- Most of the models in the literature are highly complex, and require data that are not generally available to planning agencies.

1.1 Objectives of the Quick Response Freight Manual

The objectives of this manual are as follows:

- To provide background information on the freight transportation system and factors affecting freight demand to planners who may be relatively new to this area,
- To help planners locate available data and freight-related forecasts compiled by others, and to apply this information in developing forecasts for specific facilities,
- To provide simple techniques and transferable parameters that can be used to develop commercial vehicle trip tables which can then be merged with passenger vehicle trip tables developed through the conventional four-step planning process,
- To provide techniques and transferable parameters for site planning, that can be used by planners in anticipating local commercial vehicle traffic caused by new facilities such as regional warehouses, truck terminals, intermodal facilities, etc.

The manual addresses freight issues at different levels of analysis. On the more detailed site planning level, the methods include predicting the number and temporal distribution

of truck trips to and from specific locations and identifying the routes used. On a more aggregate level such as corridor, metropolitan area, or regional level, the manual helps develop forecasts of trips generated by various traffic analysis zones and distribute these trips to the transportation network.

The analytical methods contained in the manual place special emphasis on inclusion of transferable parameters that can be used as default values for model inputs when data specific to the State or metropolitan area are not available.

This manual also identifies alternative analytical methodologies and data collection techniques in order to improve the accuracy of the freight analysis and planning processes.

1.2 Organization of the Manual

The manual is organized such that each chapter is independent of the others and the user can only read the chapter or chapters that serve his or her interests. The following describes the main chapters of the manual:

Chapter 2 - Factors Affecting Freight Demand identifies and describes a variety of factors that influence the demand for goods and commodities as well as the costs and service levels associated with freight transportation.

Chapter 3 - Simple Growth Factor Methods provides basic methods that can be used to forecast changes in freight demand due to changes in the level of economic activity and other factors affecting freight demand as described in Chapter 2. This chapter also describes ways in which the freight demand forecasts can be improved.

Chapter 4 - Incorporating Commercial Vehicles into the Travel Forecasting Process deals with the development of commercial vehicle trip tables for use as part of a conventional four-step travel forecasting process. The steps include Trip Generation, Trip Distribution, and Trip Assignment. The procedures are applied to a hypothetical study area. The chapter also provides information on time-of-day (or temporal) distribution of truck traffic.

Chapter 5 - Site Analysis describes and illustrates procedures for predicting the changes in commercial vehicle traffic and level of service characteristics on transportation networks due to specific planned facilities including major intermodal facilities and other special trip generators.

Chapter 6 - Data Collection to Support More Accurate Freight Analysis identifies primary and secondary data collection methodologies and data sources which can be used to improve the accuracy and reliability of the freight planning process.

Chapter 7 - Principles of Application provides additional guidance when applying the methods discussed in this manual in common planning problems.

Chapter 8 - Statewide Freight Forecasting in Support of Regionwide Forecasting explains the relationships between statewide and regional freight planning. Procedures adapted by Kansas and Wisconsin for freight analysis and planning in the state and regional levels are compared and contrasted. This chapter also discusses the advantages of Intermodal Management System (IMS) in freight planning and describes efforts by a number of States to develop an IMS.

Chapter 9 - Case Study Applications to Urban Areas presents real-world applications of the methods contained in the manual, as well as existing freight forecasting software models, to three urban settings namely: Lawrence, Kansas; Appleton, Wisconsin; and Green Bay, Wisconsin. An example of site analysis is also presented for a major trip generator in Green Bay, Wisconsin.

In addition to the main chapters, the manual contains an extensive compilation of data, data sources, data collection techniques and other literature pertaining to freight analysis. These are included in the appendix materials as follows:

Appendix A - Glossary of Terms defines some of the most common terms used in freight planning and analysis.

Appendix B - Selected References contains some of the bibliographical sources and materials used to develop the concepts and methodologies in the manual.

Appendix C - Standard Industrial Classification (SIC) Codes is a summary of descriptions and codes corresponding to the land use categories or classification of employers and establishments in any given location.

Appendix D - Trip Generation Summary Tables contains detailed truck trip generation rates for specific locations, land use types/SIC Codes, and commercial vehicle classifications. The rates are expressed in number of trips generated per employee, per 1,000 square feet of building space, and per acre of total land area. Appendix D also includes a table of trip generation regression formulae obtained from literature.

Appendix E - Internal Versus External Truck Trips compares the percentages of internal and external truck trips at a number of sites.

Appendix F - Time-of-Day Characteristics contains information on the hourly distribution of commercial vehicle traffic in selected areas.

Appendix G - Guide to State Data Centers lists for each State the name, address and telephone number of major organizations which collect, analyze and distribute economic data and statistical information which can be used for freight forecasting and analysis. The names of magazines, abstracts or journals that contain this information are also included.

Appendix H - Guide to State Trucking Associations lists for each State the name, address and telephone number of a major organization whose interests include (but are not necessarily limited to) truck transportation.

Appendix I - Bureau of Census Regional Offices identifies the cities, addresses and phone numbers of regional offices of the U.S. Census Bureau which can provide information on relevant freight and economic data collected by the Census such as the County Business Patterns.

Appendix J - National Trade Associations identifies the names, addresses, phone numbers and mission statements of national associations (mostly non-profit) that deal with a variety of freight issues.

Appendix K - Freight Transportation Data Sources lists and describes various sources of data (primarily Federal) and methods relevant to freight that are available to the public.

Appendix L - Commercial Data Sources lists and describes various sources of data and methods relevant to freight which can be purchased from private entities.

Appendix M - Recent Freight and Truck Surveys is a listing of freight and truck surveys recently conducted in various locations throughout the United States which are excellent sources of methods and techniques for data collection and analysis.